3.4 UTILITIES

The discussion regarding utilities on McGregor Range includes water supply, wastewater treatment, solid waste disposal, energy, and communications.

3.4.1 Water Supply

No perennial streams are present in McGregor Range. Stream and spring flow have been captured in the Sacramento Mountains to the north and diverted onto McGregor Range by ranchers since the late 1800s. In the early 1900s, pipelines began to replace the existing ditches, until, at the present time two water delivery systems, consisting of three main lines are in place. One line crosses the northwest quarter of McGregor Range to supply the community of Oro Grande with potable water, and the other two lines in a series of branches, deliver water to wildlife (and secondarily to livestock) on the southern slopes of the Sacramento Mountains and that part of the Otero Mesa that lies in McGregor Range (BLM, 1985). The latter system delivers an estimated 60 to 65 gallons per minute (gpm) (about 100 acre feet per year [afy]) (U.S. Army, 1998f). In addition, numerous earthen dams collect runoff in channels of the larger arroyos in the grazing areas. Surface water on McGregor Range is too unreliable for development as a military or public water supply.

Groundwater resources in McGregor Range have not been developed extensively. A groundwater study was completed (Rapp, 1958) to determine if a supply of 100 gpm of potable water could be developed for the McGregor Range Camp. In general, groundwater was too saline for human consumption, and the Army found it more economical to import El Paso city water to McGregor Range Camp.

A 12-inch, 19.5-mile steel line with a capacity of 2,115 gpm (3.046 million gallons per day [mgd]) supplies water to McGregor Range Camp from a city booster station (U.S. Army, 1997a). A gravity-fed, looped distribution system, consisting of two elevated storage tanks, each of 250,000 gallon capacity, and several thousand feet of water line serve McGregor Range Camp. The water is chlorinated as it enters the distribution system at McGregor Range Camp. Water consumption at McGregor Range Camp, including that at Meyer Range, for FY 96 was 31,761,000 gallons (97 acre feet [af]), which included water used on two road construction projects that year. Consumption for the previous year (without road construction) was 25,116,000 gallons (77 af).

A composite 6-inch, 8-inch, and 10-inch asbestos concrete (AC) line from McGregor Range Camp provides water to Meyer Range. The line is capable of handling a flow of 705 gpm or 1.02 mgd (U.S. Army, 1997a). The Meyer Range system consists of one storage tank; 3,120 feet of 8-inch line; 150 feet of 6-inch line; 790 feet of 4-inch line; 900 feet of 2-inch line; and service lines. The elevated steel storage tank provides for an on-site gravity system. This facility has a 25,000-gallon capacity and was built in 1966. It is connected to the distribution system by an 8-inch AC line. An altitude valve on the incoming 6-inch line to the tank prevents the tank from overflowing, necessitated by a 63-foot drop in hydraulic pressure (head) between the range camp and Meyer Range (U.S. Army, 1985).

Davis Dome is serviced by a 4-inch line from the main 8-inch line. When pressures in the main system are not sufficient to properly serve Davis Dome, a small 30 gpm capacity booster pump station is utilized (U.S. Army, 1985).

The ASP located west of the McGregor Range Camp is serviced with water by a feeder line from the main water line running along the south side of the McGregor Range entrance road from U.S. Highway 54 to the McGregor Range Camp. A small water distribution network serves the MQM-107 launch facility on south McGregor and is fed by a 1,000-gallon tank that is filled by the using unit. The MQM-107 launch facility at north McGregor is fed by a 1,500-gallon tank that is filled by the using unit. The

SHORAD Range water is brought to the area by truck and pumped into an elevated 100,000-gallon storage tank. The north McGregor Range is serviced by a 10,000-gallon storage tank that is filled by the using unit. This tank serves a fire hydrant and the repair shop. The pumphouse contains a 7.5 horsepower pump that is rated at 300 gpm against 60 feet of head. The distribution network consists of a 6-inch diameter pipe feeding the fire hydrant and a valved 2-inch diameter service line for the repair shop. The water is chlorinated before delivery (U.S. Army, 1985).

A project is underway to investigate geothermal properties of the groundwater in the Davis Dome area (see Section 3.7.2.1). Preliminary reports indicate that sufficient geothermal energy is available to power a potential desalination plant at the site.

3.4.2 Wastewater Treatment

The sanitary sewer system at McGregor Range Camp consists of a gravity system that flows approximately one-half mile to the southwest of the camp and empties into a single-cell lagoon with a surface area of 10.23 acres. The daily biochemical oxygen demand (BOD) load for the lagoon is 409.2 pounds/day, using a loading rate of 40 pounds/day/acre (Landis, 1997).

At Meyer Range, 6 miles southeast of McGregor Range Camp, a gravity flow system feeds into a lift station that pumps wastewater about one-half mile to a two-cell lagoon series with a surface of 1.68 acres each. The BOD load for the lagoons is 134.4 pounds/day, using a loading rate of 40 pounds/day/acre (Landis, 1997).

The sewage treatment system at the SHORAD range consists of a 100,000-gallon evaporation pond. The pond is seldom used and does not overflow (Landis, 1998).

Stormwater drainage from McGregor Range Camp and Meyer Range consists of sheet flow to the west and southwest, eventually flowing into an ephemeral lake a mile southwest of the camp. Analysis of the storm drainage system indicated that the lake has adequate volume to contain a 10-year discharge. A small amount of nuisance ponding may occur within the range camp and at Meyer Range. Evaluation of the 25-year stormwater event indicated that protection of the facilities at the range camp and Meyer Range is adequate (U.S. Army, 1985).

3.4.3 Solid Waste Disposal

Solid waste generated on McGregor Range is placed in dumpsters and picked up by the private contractor that services the Main Cantonment Area (Lenhart, 1998).

3.4.4 Energy

Electrical power is provided by EPEC through a 39.8/69 kV transmission line that extends from McGregor Range Camp to an EPEC substation. The substation is equipped with a 7,500 kV oil-cooled transformer.

McGregor Range Camp receives natural gas from the Gas Company of New Mexico, who purchases the gas from El Paso Gas Company. A 2-inch high pressure natural gas pipeline extends 14.15 miles from an intrastate pipeline to McGregor Range Camp. A 1-inch distribution system provides gas to buildings throughout the range camp. There is no natural gas service to Meyer Range. Meyer Range is dependent on liquid petroleum gas (LPG) to meet its heating needs. Two 2,000-gallon tanks serve the bivouac area, and a 5,000-gallon tank serves the range area.

3.4.5 Communications

Fort Bliss, including McGregor Range Camp, is served by a contract-operated commercial telephone system. The central exchange has more than 350 city connections and 78 FTS2000 Integrated Switch Digital Network (ISDN) trunk lines. Fort Bliss is also currently using the Defense Switched Network (DSN) as a communication link with other U.S. military lines. There are 96 trunk lines. The DSN bypasses and operates separately from commercial telephone networks. The DSN gives a higher degree of security to communications than commercial systems and is reserved exclusively for intragovernmental service.

The installation currently has cellular telephones leased from a private contractor. The systems are completely portable and have a range of approximately 60 miles, but are limited by the location of the antenna station in the southern Franklin Mountains.

Microwave and fiber optic systems at Fort Bliss allow communication within the entire installation. The radio systems in use include FM, VHF, and trunking radios. A Military Affiliate Radio System station also is used on the post for communications and mobilization exercises. Frequencies for all of these systems are properly assigned and utilized according to federal law, Army regulations, and post orders.